

Claims

What is claimed is:

1. A method for providing distributed communication routing, the method comprises the steps of:

- a) obtaining registration information from a plurality of forwarding engines;
- b) identifying the plurality of forwarding engines based on the registration information;
- c) generating at least one specific forwarding table for at least one corresponding forwarding engine of the plurality of forwarding engines; and
- d) forwarding the at least one specific forwarding table to the at least one corresponding forwarding engine.

2. The method of claim 1, wherein step c) further comprises generating, as the at least one specific forwarding table, one forwarding table for the plurality of forwarding engines.

3. The method of claim 1, wherein step c) further comprises generating, as the at least one specific forwarding table, a corresponding forwarding table for each of the plurality of forwarding engines.

4. The method of claim 1, wherein step c) further comprises generating, as the at least one specific forwarding table, a corresponding forwarding table for each grouping of the plurality of forwarding engines.

5. The method of claim 1, wherein step (b) further comprises authenticating each of the plurality of forwarding engines prior to the identifying.
6. The method of claim 1 further comprises verifying receipt of the at least one specific forwarding table by the at least one corresponding forwarding engine.
7. The method of claim 1 further comprises updating the at least one specific forwarding table based on configuration changes of a network.

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8. A method for providing distributed communication routing, the method comprises the steps of:

- a) obtaining registration information from a plurality of forwarding engines;
- b) identifying the plurality of forwarding engines based on the registration information;
- c) [determining internal routing connections and external routing connections for the plurality of forwarding engines];
- d) generating at least one external forwarding table for at least some of the plurality of forwarding engines;
- e) generating at least one specific internal forwarding table for at least one corresponding forwarding engine of the plurality of forwarding engines; and
- f) [forwarding the at least one specific internal forwarding table and the at least one external forwarding table to the at least one corresponding forwarding engine.]

9. The method of claim 8, wherein step (d) further comprises generating, as the at least one external forwarding table, a single external forwarding table for the plurality of forwarding engines.

10. The method of claim 8, wherein step (d) further comprises generating, as the at least one external forwarding table, a corresponding external forwarding table for each grouping of the plurality of forwarding engines.

11. The method of claim 8, wherein step (e) further comprises generating, as the at least one specific internal forwarding table, at least one of: a single internal forwarding

table for the plurality of forwarding engines, a corresponding internal forwarding table for each of the plurality of forwarding engines, and a corresponding internal forwarding table for each grouping of the plurality of forwarding engines.

12. The method of claim 8 further comprises updating at least one of the at least one specific internal forwarding table and the at least one external forwarding table based on configuration changes of a network.

13. The method of claim 8 further comprises:

identifying a second plurality of forwarding engines based on the registration information;

[determining second internal routing connections and second external routing connections for the second plurality of forwarding engines;]

generating at least one second external forwarding table for at least some of the second plurality of forwarding engines;

generating at least one second specific internal forwarding table for at least one second corresponding forwarding engine of the second plurality of forwarding engines; and

[forwarding the at least one second specific internal forwarding table and the at least one second external forwarding table to the at least one second corresponding forwarding engine.]

14. The method of claim 13 further comprises multiplexing forwarding of the at least one specific internal forwarding table and the at least one second specific internal forwarding table and of the at least one external forwarding table and the at least one second external forwarding table to the at least one and the at least one second forwarding

[illegible]

15. A method for providing distributing communication routing, the method comprises the steps of:

- a) providing registration information;
- b) receiving at least one forwarding table in response to the registration information;
- c) receiving packets for routing; and
- d) forwarding the packets based on information contained in the at least one forwarding table.

16. The method of claim 15, wherein the at least one forwarding table comprises at least one of: a corresponding specific forwarding table for each forwarding engine of a plurality of forwarding engines of a distributed router, a corresponding specific forwarding table for each grouping of the plurality of forwarding engines, and a single forwarding table for the plurality of forwarding engines.

17. The method of claim 15, wherein the at least one forwarding table comprises an internal forwarding table and an external forwarding table.

18. The method of claim 15 further comprises updating the at least one forwarding table based on update information (new table or the updated portions only), wherein the update information corresponds to configuration changes within a network.

19. A distributed network routing element comprises:

a processing module; and

memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to (a) obtain registration information from a plurality of forwarding engines; (b) identify the plurality of forwarding engines based on the registration information; (c) generate at least one specific forwarding table for at least one corresponding forwarding engine of the plurality of forwarding engines; and (d) forward the at least one specific forwarding table to the at least one corresponding forwarding engine.

20. The distributed network routing element of claim 19, wherein the memory further comprises operational instructions that cause the processing module to generate, as the at least one specific forwarding table, at least one of: one forwarding table for the plurality of forwarding engines; a corresponding forwarding table for each of the plurality of forwarding engines; a corresponding forwarding table for each grouping of the plurality of forwarding engines.

21. The distributed network routing element of claim 19, wherein the memory further comprises operational instructions that cause the processing module to authenticate each of the plurality of forwarding engines prior to the identifying.

22. The distributed network routing element of claim 19, wherein the memory further comprises operational instructions that cause the processing module to verify receipt of the at least one specific forwarding table by the at least one corresponding forwarding engine.

24. A distributed network routing element comprises:

a processing module; and

memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to (a) obtain registration information from a plurality of forwarding engines; (b) identify the plurality of forwarding engines based on the registration information; (c) determine internal routing connections and external routing connections for the plurality of forwarding engines; (d) generate at least one external forwarding table for at least some of the plurality of forwarding engines; (e) generate at least one specific internal forwarding table for at least one corresponding forwarding engine of the plurality of forwarding engines; and (f) forward the at least one specific internal forwarding table and the at least one external forwarding table to the at least one corresponding forwarding engine.

25. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to generate, as the at least one external forwarding table, a single external forwarding table for the plurality of forwarding engines.

26. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to generate, as the at least one external forwarding table, a corresponding external forwarding table for each grouping of the plurality of forwarding engines.

27. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to generate, as the at least one specific internal forwarding table, at least one of: a single internal forwarding table for the plurality of forwarding engines, a corresponding internal forwarding table for

each of the plurality of forwarding engines, and a corresponding internal forwarding table for each grouping of the plurality of forwarding engines.

28. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to update at least one of the at least one specific internal forwarding table and the at least one external forwarding table based on configuration changes of a network.

29. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to:

identify a second plurality of forwarding engines based on the registration information;

determine second internal routing connections and second external routing connections for the second plurality of forwarding engines;

generate at least one second external forwarding table for at least some of the second plurality of forwarding engines;

generate at least one second specific internal forwarding table for at least one second corresponding forwarding engine of the second plurality of forwarding engines; and

forward the at least one second specific internal forwarding table and the at least one second external forwarding table to the at least one second corresponding forwarding engine.

30. The distributed network routing element of claim 24, wherein the memory further comprises operational instructions that cause the processing module to multiplex forwarding of the at least one specific internal forwarding table and the at least one second specific internal forwarding table and of the at least one external forwarding table

[illegible]

31. A distributed network routing element comprises:

a processing module; and

memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to (a) provide registration information; (b) receive at least one forwarding table in response to the registration information; (c) receive packets for routing; and (d) forward the packets based on information contained in the at least one forwarding table.

32. The distributed network routing element of claim 31, wherein the at least one forwarding table comprises at least one of: a corresponding specific forwarding table for each forwarding engine of a plurality of forwarding engines of a distributed router, a corresponding specific forwarding table for each grouping of the plurality of forwarding engines, and a single forwarding table for the plurality of forwarding engines.

33. The distributed network routing element of claim 31, wherein the at least one forwarding table further comprises an internal forwarding table and an external forwarding table.

34. The distributed network routing element of claim 31, wherein the memory further comprises operational instructions that cause the processing module to update the at least one forwarding table based on update information (new table or the updated portions only), wherein the update information corresponds to configuration changes within a network.